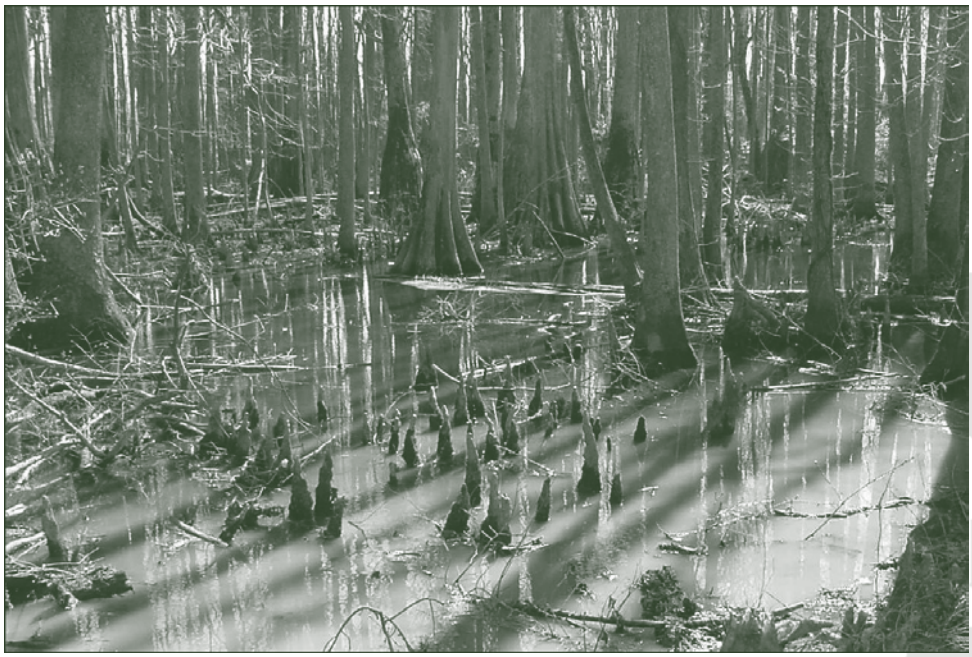
CHAPTER 9

WETLANDS

Wetlands



The Army Corps of Engineers defines “wetlands” in their delineation manual as follows: Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.

Description of Forested Wetland Types

Red River Bottoms – These wetlands are usually located in the floodplain of major rivers with the headwaters originating in the Piedmont or Mountains regions. These areas are parallel and immediately adjacent to the drainage system, sloughs and oxbows. If large enough, they may be classified separately as muck swamps. This wetland type is characterized by turbid, sediment-bearing water flowing in well-defined channels and sloughs with overland flow during seasonal floods. Water tupelo, cypress, red maple, swamp black gum, and others are found along these sloughs. Beyond the sloughs and oxbows are found first bottoms that flood periodically; however, drainage is fairly rapid because of higher elevation. Species include sweetgum, green ash, water oak, sycamore, red maple, river birch, elms, and willow. At still higher elevations, second bottoms and terraces are found; flooding is infrequent and species found include cherrybark, swamp chesnut and white oaks, hickories, beech and yellow poplar.

Black River Bottoms – These wetlands are usually located in floodplains of major rivers with headwaters in the large swamps of the Lower Coastal Plain. The river banks and first terraces flood periodically during the wet season. The low sediment load of blackwater rivers allows less development of complex terrace systems than alluvial rivers. It is characterized by darkly colored and generally low-turbidity water flowing in well-defined channels. Species of trees found are similar to red river bottoms.

Branch Bottom Swamps – Relatively flat, alluvial land along minor drainage systems. They are dominated by constant seepage of spring-fed water with minor flooding during the wet season. On wetter portions with heavier soils, the predominant species are willow and water oaks, swamp black gum, sweetgum, red maple and ash. The lighter soils of the terrace support cherrybark, swamp chestnut and white oaks, sweetgum, hickory, yellow poplar and loblolly pine.

Cypress Strand – These elongated or linear sequences of depressions occur infrequently in the flatwoods. The waters are slowly draining through multiple braided channels or by sheetflow into blackwater rivers. The forest vegetation is dominated by bald cypress interspersed with sweetbay and redbay, swamp black gum and sometimes Atlantic white cedar.

Muck Swamp – This wetland type is characterized by slow moving to standing water during the dry seasons but more rapid sheetflow during annual flood stages. They are semi-permanently flooded during the growing season and are characterized by heavy accumulation of organic matter. Soils range from silt loam to clay. Water tupelo and bald cypress are common in deeply flooded areas and swamp black gum predominates toward the fringes.

Wet Flat – Similar to peat swamps and pocosins, they lie in broad interstream areas where drainage systems are poorly developed. However, wet flats are better drained than their associates because of higher elevation. The non-alluvial soils may possess some accumulation of organic material, but fertility is superior to peat swamps and pocosins because of superior parent material. Species generally encountered are sweetgum, red maple, oaks, ashes, loblolly pine and elms.

Peat Swamp – These are located at the headwaters of most blackwater drainages. The areas consist of large concave depressions behind natural impounding levees or ridges. Peat swamps mainly impound rainwater and may recharge groundwater of the surrounding area when the water table is low during the dry season. The swamps are poorly drained with heavy accumulations of raw organic matter. Soils resemble those of muck swamps but in general are heavier and of better quality. Swamp black gum and red maple predominate with a mixture of many other hardwood species along with loblolly and pond pines and some Atlantic white cedar.

Cypress Pond – These occur infrequently and are irregular or circular swamps formed by depressions and sink holes and are often connected by cypress stands. They are characterized by standing or very slowly flowing water during the wet season if connected to a channel or

outlet. Cypress ponds mainly impound rainwater and may recharge groundwater of the surrounding area when the water table is low during the dry season. The site is dominated by bald or pond cypress.

Jurisdictional wetlands require three criteria:

1. *Hydrophytic vegetation* – plants that have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions.

2. *Hydric soils* – soils that are saturated, flooded, or ponded long enough during the growing season for anaerobic conditions to develop.

3. *Wetland hydrology* – inundated by water sufficient to support hydrophitic vegetation and develop hydric soils.

All three must be present under normal circumstances for an area to be identified as a jurisdictional wetland.

Many sites classified as bottomlands may be wetland-like, but are not necessarily "wetlands" in the strictest legal or jurisdictional sense. Jurisdictional wetlands are found throughout the state and are not limited to flooded or open marsh areas.

Maintaining ecological productivity for wetland and wetland-like sites often calls for the same management techniques. These wetland BMPs work well in both types of sensitive land types.

Although wetlands are federally regulated, normal forestry operations in wetlands–including but not limited to site preparation, harvesting, and minor drainage–are exempt from permit requirements under Section 404 of the Clean Water Act Amendments of 1977, as long as the activity:

- Qualifies as normal silviculture;
- Is part of an established silvicultural operation;
- Does not support the purpose of converting a water of the United States to a use to which it was not previously subject;
- Follows the 15 mandatory BMPs for road construction, and the six mandatory BMPs for site preparation; and
- Contains no toxic pollutant listed under Section 307 of the Clean Water Act in discharge of dredge or fill materials into waters of the United States.

A forestry activity will require a Section 404 permit if it results in the conversion of a wetland to a non-wetland. Individuals who wish to change land use, or whose activity may change the land use, or who are uncertain about permit exemption status of a forestry activity, should contact the U.S. Army Corps of Engineers. If the activity is on a farmed wetland or on agricultural land, the Natural Resources Conservation Service is the appropriate initial contact.

Minor Drainage refers to installation of ditches or other water control facilities for temporary de-watering of an area. Minor drainage is considered a normal silvicultural activity in wetlands to temporarily lower the water level and minimize adverse impacts on a wetland site during road construction, timber harvesting and reforestation activities. *Minor drainage does not include construction of a canal, dike or any other structure that continuously drains or significantly modifies a wetland or other aquatic area.*

Minor drainage is exempt from needing an individual 404 permit if it is part of an ongoing silvicultural operation and does not result in the immediate or gradual conversion of a wetland to an upland or other uses. Any artificial drainage on a site must be managed. Once the silvicultural activity has been completed, the hydrology that existed prior to the activity should be restored by closing drainage channels.

Normal Silvicultural Activities conducted as part of "established, ongoing" silvicultural operations are exempt from Section 404 Corps of Engineers permit requirements as long as the appropriate measures are implemented. Normal activities include but are not limited to road construction, timber harvesting, site preparation, reforestation, timber stand improvement, and minor drainage. Best Management Practices listed in the Virginia Technical Guide are not necessary for exemption from Section 404 Corps of Engineers permit requirements, but they are strongly recommended to minimize nonpoint source pollution of waters of the Commonwealth and/or waters of the United States. Their utilization will also help prevent violations of the Virginia Silvicultural Water Quality Law.

Established Silvicultural Operations are included in a management system (not necessarily written) that is planned over conventional rotation cycles for a property or introduced as part of an established operation. An activity need not itself have been ongoing as long as it is introduced as part of an ongoing operation.

Evidence of use of the property may be used to determine whether an operation is ongoing. Examples of such evidence may include, but are not limited to:

- A history of harvesting with either natural or artificial regeneration;
- A history of fire, insect and disease control to protect maturing timber;
- The presence of stumps, logging roads, landings or other indications of established silvicultural operations that will continue on the site;

- Explicit treatment of the land as commercial timberlands by government agencies under zoning, tax, subsidy, and regulatory programs;
- Certification under the National Tree Farm System or Stewardship Program; or
- Ownership and management by a timber company or individual whose purpose is timber production.

For federal wetland BMPs required for exemption from Section 404 permit requirements, refer to Chapter 10, Federal Clean Water Act, Mandated Best Management Practices for Road Construction and Maintenance BMPs.

Site Preparation BMPs for Pine Plantation Management in Wetlands

1. *Minimize soil disturbance.* Position shear-blades or rakes at or near the soil surface and windrow or pile and otherwise move logs and logging debris by methods that minimize dragging or pushing through the soil to minimize soil disturbance associated with shearing, raking, and moving trees, stumps, brush and other unwanted vegetation.
2. *Avoid soil compaction.* Conduct activities in such a manner as to avoid excessive soil compaction and maintain soil tilth.

3. *Limit erosion and runoff.* Arrange windrows in such a manner as to limit erosion, overland flow and runoff.
4. *Keep logging debris out of SMZs.* Prevent disposal or storage of logs or logging debris in streamside management zones to protect water quality.
5. *Maintain natural contour and drainage.* Maintain the natural contour of the site and ensure that activities do not immediately or gradually convert the wetland to a non-wetland.
6. *Exercise water management.* Conduct activities with appropriate water management mechanisms to minimize off-site water quality impacts.

When Using Chemicals in Wetlands:

1. Follow *all* label instructions. Some chemicals are approved for wetlands; others are not.
2. Conduct applications by skilled and licensed applicators.
3. Identify and establish buffer areas for moving surface waters, especially for aerial applications.

Wetlands Best Management Practices (State)

Planning is a critical BMP when working in wetland areas. At all times, three primary considerations should be maintained:

1. Consider the relative importance of the wetland in relation to the total property to be managed. Perhaps the wetland should be left undisturbed.
2. Protect the environment. Do not alter the hydrology of the wetland by:
   - Restricting the inflow or outflow of surface, sub-surface or groundwater;
   - Reducing residence time of waters;
   - Introducing toxic substances; or
   - Changing the temperature regime.
3. Protect wildlife habitat.

Identify and comply with local, state, and federal regulations.

Identify control points–those places within the areas to be managed that should be accessed, those that should be avoided, or those that need special consideration.

Identify and mark Streamside Management Zones.

Locate access system components such as roads, landings, skid trails, and maintenance areas outside filter strips and streamside management zones.

Access Systems

Wetland Forest Roads

Roads provide access for timber removal, fire protection, routine forest management activities, and other multiple use objectives. When properly constructed and maintained, roads will have minimal impact on water quality, hydrology, and other wetland functions.

Permanent roads are constructed to provide multiple season access for silvicultural activities and are maintained regularly. Construction of permanent roads in wetlands and wetland-like areas should be minimized.

Road drainage designs in wetlands must provide cross drainage of the wetland during both flooded and low water situations.

Methods of cross drainage in fills for wetlands:

1. Space 24” culverts at regular intervals along the fill throughout the wetland. These culverts should have one-half their diameter placed below ground level to handle sub-surface flow. The fills around all culverts should be stabilized. (Refer to Culverts section for detailed installation information.)

2. Install a 12” thick porous layer of material aligned in elevation with the porous surface soil layer. A layer of geotextile cloth should separate the layers of this type road.

Use drainage techniques such as crowning, insloping, outsloping and 2% minimum grades, as well as surface gravel and maintenance, to ensure adequate drainage and discourage rutting and associated erosion and sedimentation.

All road outflows from road ditches should be discharged before entering wetlands and riparian areas to minimize the introduction of sediment and other pollutants.

Road width should be kept to the minimum necessary to achieve silvicultural operational success. Typically, on straight road sections the running surface should be no more than 12 feet wide. Curved road running surfaces should be no more than 16 feet wide.

Use geotextile fabric during construction to minimize disturbance, fill requirements, and maintenance costs.

Ditches parallel to the road center line should be constructed along the toe of the fill to collect surface and subsurface water, carry it through the cross drainage structure, and redistribute the water on the other side of the road.

All fills in wetlands should consist of free-draining granular material.

Build roads in advance of harvesting to allow them to settle and harden.

Favor temporary roads that will be “closed” after the silvicultural operation is completed.

Wetland Skid Trails

Choose the best harvesting system to remove the timber. The choice should minimize equipment entry into the wetland areas.

Where equipment entry into wetlands in unavoidable, minimize the area disturbed and practice dispersed skidding.

Skid trail wetland crossing

Use specialized equipment that exerts very low ground pressure to traverse wetland areas. The use of such equipment on areas that are marginally operable with conventional equipment results in minimum impact.

Shovel logging

Schedule the harvest during dry seasons of the year or during times when the ground is completely frozen.

Minimize the crossing of perennial or intermittent streams and waterways. Use portable bridges, pole bridges (in dry channels) and corduroy approaches to minimize bank disturbance and sedimentation.

Cross streams at right angles and use bumper trees to keep logs on the trail or bridge.

Do not skid through vernal ponds, spring seeps, or stream channels.

Wetland Log Landings (Decks)

Keep the number and size of landings to the minimum necessary to accomplish the operation.

Locate landings on well-drained areas that are not located near streams, seeps, or other water-conveying channel.

Geotextile fabric is recommended in wetlands and on soils with low-weight bearing strength.

BMPs for Wet Weather Operations in Wetlands

Poor wetland logging practice

1. Avoid heavy equipment operations, especially skidding, during flooded or wet soil conditions.

2. Do not operate heavy equipment, especially skidders, in floodplains when they are flooded or during conditions of flowing or standing floodwater.

3. Minimize skidder and other heavy equipment operation during wet conditions to avoid widespread excessive soil rutting. Although some minor rutting may occur in a typical wetland harvesting operation, skidders and other heavy equipment operation should be *planned* for dry seasons and/or dry periods as much as possible.

Wildlife Habitat

Wetlands provide habitat to many sensitive endangered or threatened species. Consult with DOF, DGIF, or other professionals if your tract could be home to threatened or endangered species.

When planning operations, be cognizant that these areas are very important for amphibians and other species. Be sure to incorporate elements of preserving critical habitat during the planning stage.

Wetland Streamside Management Zones

Wetland areas tend to have multiple stream channels, oxbow lakes, vernal pools, sloughs, and other unique features that do not show on topographic maps. These areas deserve special protection, and a minimum buffer of 50 feet should be left around them. Like SMZs on streams, 50% of the basal area should be retained or up to 50% of the crown cover can be removed. Crossing these features should be avoided if possible. If they must be crossed, temporary bridges, roads or skid trails (e.g., corduroy roads) or alternate logging systems (e.g., helicopter logging) should be considered. These man-made features should be removed after the operation is completed.

Both fresh and saltwater marshes require the SMZ to start at the boundary between the marsh and the woodland. Up to 50% of the crown cover or 50% of the basal area can be removed during harvesting, but the forest floor must remain undisturbed. Also, any debris from the harvesting operation must be removed from the marsh boundaries.

Legal Requirements

Federal requirements have been discussed earlier in this chapter. There are also several state laws that affect harvesting operations in wetlands.

Virginia Silvicultural Water Quality Law – states that it is illegal to conduct silvicultural operations in any manner that allows sediment or the likelihood for sediment to enter the waters of the Commonwealth.

Debris in Streams Law – states that it is illegal to impede the navigation of man or fish in any navigable stream with debris from a silvicultural operation.

Submerged Aquatic Lands Law – states that a permit is required from VMRC to cross any drainage channel that drains more than 5 square miles, as well as any crossing of a tidal stream or marsh.

There may be additional local ordinances governing operations in wetland areas. Check with local authorities before beginning any operation.

Where to Go for Wetlands Assistance

Contact the Department of Forestry for assistance in forest management on both uplands and wetlands. However, forest management activities on wetlands are subject to special regulations. See Appendix E, Agency Listings.

The District Office of the U.S. Army Corps of Engineers has the authority to determine which lands are subject to wetland regulations.

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